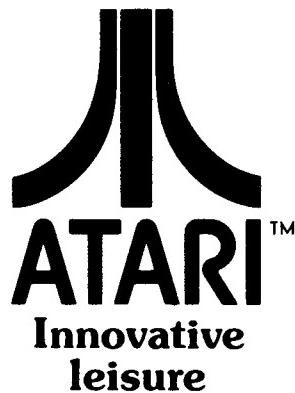
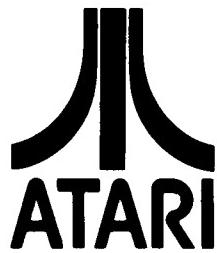


PIN PONG

Operation and Maintenance Manual





Job Title P.C. BOARD ASSEMBLY
PIN PONG - 60 HZ

Dwg. P/L 001660-01

Parts List Specification

sheet 1 of 2

Drawn Cynthia

Checked

Mech. Eng.

Rev.

Proj. Eng.

Elec. Eng.

G

Rev.	Description	Apprv.	Rev.	Description	Apprv.
C	PROD. REL	<i>[Signature]</i>			
D	REV PER ECN 751,811,812	<i>[Signature]</i>			
E	Rev per ECN 926	<i>[Signature]</i>			
F	Rev per ECN 971	<i>[Signature]</i>			
G	REV PER ECN 1071	<i>[Signature]</i>			

Item	Part. No.	Qty.	Description				
1	72062/37-74L00	1	Integrated Circuit,	74L00			
2	72000/37-7400	8	"	"	7400		
3	72001/37-7402	7	"	"	7402		
4	72002/37-7404	5	"	"	7404		
5	72027/37-7408	8	"	"	7408		
6	72003/37-7410	7	"	"	7410		
7	72061/37-7414	1	"	"	7414		
8	72004/37-7420	5	"	"	7420		
9	72006/37-7427	2	"	"	7427		
10	72007/37-7430	2	"	"	7430		
11	72064/37-7432	1	"	"	7432		
12	72008/37-7448	1	"	"	7448		
13	72010/37-7474	20	"	"	7474		
14	72059/37-7485	2	"	"	7485		
15	72012/37-7486	8	"	"	7486		
16	72013/37-7490	4	"	"	7490		
17	72014/37-7493	3	"	"	7493		
18	72015/37-74107	4	"	"	74107		
19	72016/37-74153	2	"	"	74153		
20	72060/37-74164	1	"	"	74164		
21	72035/37-74193	5	"	"	74193		
22	72024/37-9312	4	"	"	9312		
23	72036/37-9314	3	"	"	9314		
24	72017/37-9316	3	"	"	9316		
25	72031/37-9321	1	"	"	9321		
26	72025/37-9322	4	"	"	9322		
27	72026/37-9602	1	"	"	9602		
28	72057/37-LM323K	1	LM323K				
29	72048/37-LM380	1	"	"	LM380		
30	72058/37-MC4024	1	"	"	MC4024		
31	72042/37-MFC6040	1	"	"	MFC 6040		
32	72040/37-CD4016	1	"	"	CD4016		
33	72021/37-NE566	1	"	"	NE566		
34	22103/19-311103	1	Trimpot, 10K				
35	22502/19-311502	1	Trimpot, 5K				
36	22105/19-311105	1	Trimpot, 1M				
37	37000/24-160802	1	Capacitor, Electrolytic, 8,000 uf, 16V				

PARTS LIST SPECIFICATION

Dwg. P/L 001660-01

Title PCB ASSY. - PIN PONG - 60 HZ

sheet 2 of 2

Rev. G

Item	Part No.	Qty.	Description			
38	35503/24-250501	3	Capacitor, Electrolytic, 500 uf, 25V			
39	35254/24-060251	1	" " 250 uf, 6V			
40	39100/29-001	2	Tantalum, 100 uf, 10V			
41	35506/24-250100	2	Electrolytic, 10 uf, 25V			
42	35472/24-100050	2	" " 5 uf, 16V			
43	35508/24-250010	1	" " 1 uf, 25V			
44	34101/27-101104	16	Ceramic, Disc, .1 uf			
45	32221/27-101224	1	Mylar, .22 uf			
46	30332/28-101471	1	Mica, 470 pf			
47	30101/28-101101	1	" 100 pf			
48	30102/28-101221	6	" 220 pf			
49	71001/31-1N4001	6	Diode, 1N 4001			
50	31-1N1612	2	Diode, 1N 1612			
51	71000/31-1N914	15	Diode, 1N 914			
52	71020/32-1N5237	1	Diode, 1N 712 (or 1N 5237), 8.2V Zener			
53	70009/34-2N5190	1	Transistor, 2N 5190			
54	70000/34-2N3643	3	Transistor, 2N 3643			
55	70001/34-2N3544	1	Transistor, 2N 3644			
56	19100/19-808W4P0	1	Resistor, 10 Watt, 4 ohm			
57	12103/11-0151	1	" $\frac{1}{2}$ Watt, 150 ohm			
58	11270/19-839C2P7	1	Carbon, $\pm 5\%$, $\frac{1}{4}$ Watt, 2.7 ohm			
59	11123/10-5123	1	" " " 12K ohm			
60	10101/10-0101	4	" $\pm 10\%$, " 100 ohm			
61	10151/10-0151	1	" " " 150 ohm			
62	10221/10-0221	2	" " " 220 ohm			
63	10271/10-0271	3	" " " 270 ohm			
64	10331/10-0331	7	" " " 330 ohm			
65	10102/10-0102	24	" " " 1K ohm			
66	10103/10-0103	2	" " " 10K ohm			
67	10153/10-0153	2	" " " 15K ohm			
68	10181/10-0181	1	" " " 180 ohm			
69	10472/10-0472	4	" " " 4.7K ohm			
70	10273/10-0273	1	" " " 27K ohm			
71	10473/10-0473	1	" " " 47K ohm			
72	75103/75-916S	2	Nut, Hex, H6			
73	75100/72-1610C	2	Screw, Pan Head, SS, #6-32 x 5/8			
74	75101/75-056	4	Washer, Internal Star, #6			
75	75102/75-016C	2	Washer, Flat, #6			
76	75188/75-1408C	3	Screw, Machine, Pan Hd., #4-40 x $\frac{1}{2}$ ", SS			
77	75164/75-914S	3	Nut, Hex, #4-40			
78	75194/75-054	5	Washer, Internal Tooth Lock, #4-40			
79	75163/75-014S	2	Washer, Flat, #4-40			
80	60000/69-001	3	Switch, DPDT			
81	81001/90-101	1	Crystal			
82	83014/78-06001	1	Wakefield Heatsink			
83	001925	1	Printed Circuit Board, Revision C			
84	79-20102	7	Useco 2006B Terminals			
85	79-58017	1	6 Pin Polarized Male P.C. Conn.			
86	001992	1	Heatsink, Diode			
87	78-16002	A/R	Thermal Conductive Compound			
88	57-216	2	Buss Wire, #16AWG, 1 $\frac{1}{4}$ " Long			
89	75-050	2	Washer, Internal Tooth Lock, #10			
90	75-910S	2	Nut, Hex, #10-32			
91	24-100105	1	Capacitor, Electrolytic, 1 uf, 10V			
92	10-0222	1	RESISTOR, CARBON, 10%, 1/4W, 2.2K OHM			



ASSEMBLY TITLE / PIN PONG ELECTRONICS TRAY P/L 001927

P/L 001927

PARTS LIST SPECIFICATION

Page 1 of 1

Drawn

Checked

Mech. Eng.

Proj. E

-52-

— 1 —

Larry Leppan

Elec. Eng.

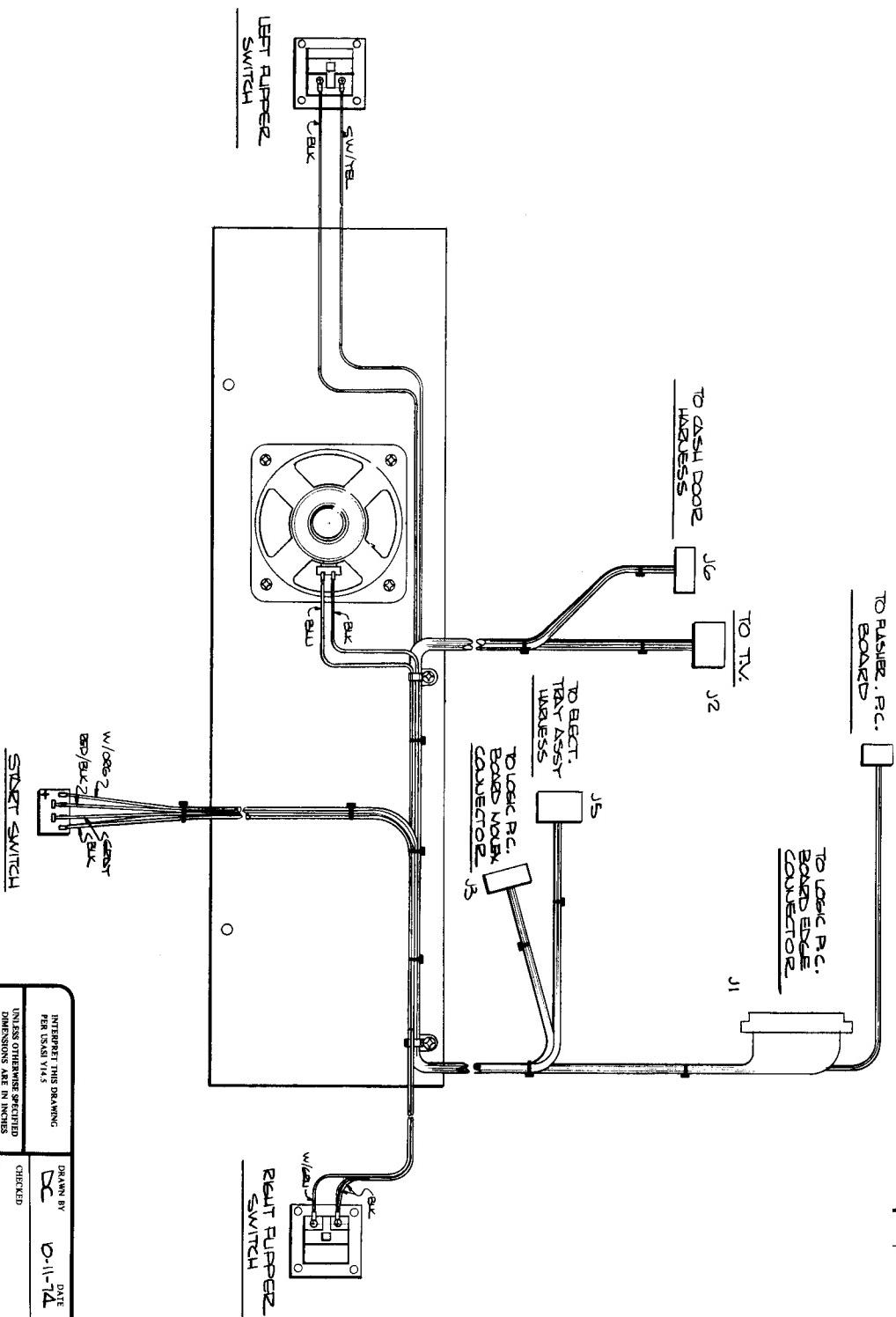
— 1 —

Elec. Eng

REV.
B

Item	Part Number	Qty.	DESCRIPTION
1	001551	1	Transformer
2	42-70102	1	Transformer
3	90-3001	1	Linefilter
4	79-3201	1	Fuse Holder
5	46-20120	1	Fuse, 2A, Slo-Blo
6	68-001	1	Interlock Switch
7	000268	1	Interlock Switch Bracket
8	72-6608	20	Screw, Sheet Metal, #6, Pan Hd., Phil., $\frac{1}{2}$ "
9	001998	1	Transformer Cover
10	71-301	1	Staple
11	54-401	1	Line Cord
12	002439	1	Harness
13	47-1001	1	Coin Counter
14	75-2824S	1	Machine Screw, #8 x $1\frac{1}{2}$ "
15	75-918S	2	8-32 Nut
16	75-018S	3	Washer, #8
17	A001995	1	Tray, Electronics
18	A001920	1	Harness, Voltage Selection
19*	A001921-01	A/R	Shorting Block, 95V
20*	A001921-02	A/R	Shorting Block, 110V
21*	A001921-03	A/R	Shorting Block, 220V (High Line)
22*	A001921-04	A/R	Shorting Block, 220V (Low Line)
23	75-8808	4	Screw, Wood, Flat Hd., Phil., #8 x $\frac{1}{2}$ " Lg.
24	78-25001	A/R	Cable Clamp
25	000871	1	Label
26	79-20101	1	Molex Male Pin 02-09-2011
27	79-58019	1	Molex Plug 03-09-2118

*Install Shorting Block per voltage required



INTERPRET THIS DRAWING PER USAI 11.5		DRAWN BY D-11-1A	DATE 10-11-74	REVISIONS		
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON ANGLES $\pm 1^\circ$ SURFACE FINISH $\pm .010$					INITIALS AND DATE	
FRACTIONS $\pm 1/16$ $\pm 1/32$					DR. DATE	CHECK
PROJECT ENGINEER John G. O'Leary					ENGR'D.	ED-24
DESIGN ENGINEER John G. O'Leary					DRAWN BY	
DOCUMENT CONTROL					REV.	
APPROVED John G. O'Leary					D	
DRAWN NO. 002446					REV. A	
SIZE D					SCALE 1/2	
MATERIAL:					SHEET 1 OF 1	

ATARI
ATARI INCORPORATED
14000 Winchester Boulevard
Los Gatos, California 95030

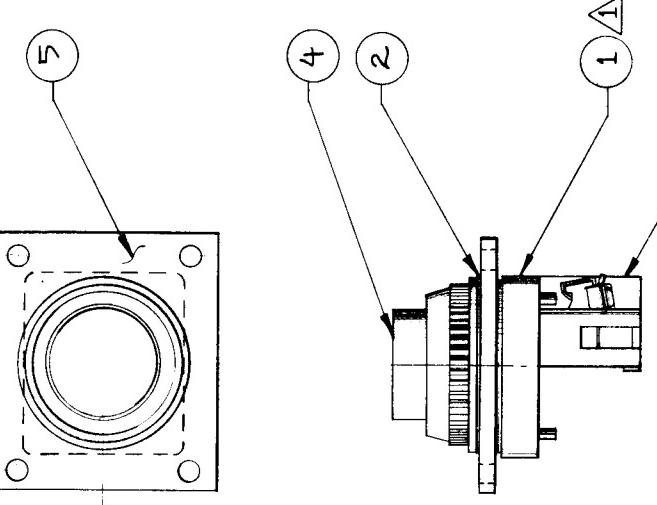
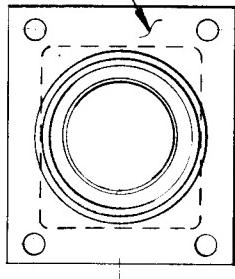
HARNESS INSTALLATION
DRAWINGS

1
2
3
4

D

C D B A

REVISONS		INITIALS and DATE		
SYM	DESCRIPTION	DRWFC	CHECK	ENGR.
A	1/16" Thick	9-18-74	RE	EC
B	Rev REC ECU 9/16	10-25-74	RE	EC
B	Rev REC ECU 9/16	11-7-74	RE	EC



① ITEM 1 IS PURCHASED WITH THREE PLASTIC SPACERS, ONE $1/16$ " THICK SPACER IS PLACED BENEATH THE ITEM 5. THE $1/8$ " THICK SPACER IS PLACED ABOVE ITEM 2. (THE SECOND $1/16$ " THICK SPACER IS OMITTED FROM THE ASSEMBLY.

NOTES:

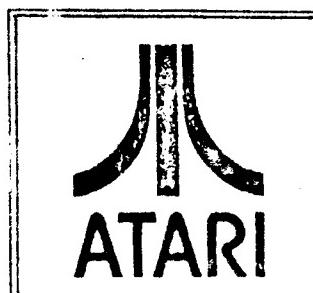
INTERPRET THIS DRAWING PER U.S.A.SI Y14.5	DRAWN BY REGAN	DATE 8-26-74	ATARI INCORPORATED
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	CHEKED	14600 Winchester Boulevard	
TOLERANCES ON: FRACTIONS = $\pm 1/16$ ANGLES = $\pm 1^\circ$	DESIGN ENGINEER REGAN	Los Gatos, California 95030	
ANGLES = $\pm 1^\circ$ AX = $\pm .03$	PRODUCT ENGINEER <i>John M. Bryant</i> 9/18/74	TITLE SWITCH ASSEMBLY	
SURFACE FINISH ✓	DOCUMENT CONTROL		
XXX = $\pm .010$			
MATERIAL:			
SEE P/N 001929			
AC001812 AC001813			
NEXT ASSY			
USED ON			
APPLICATION			
RIV	DRAWING NO	B A001929	
SIZE	SCALE	FULL	
	SHEET	1 OF 1	

1

2

3

4



Job Title SWITCH ASSEMBLY
PIN PONG

Dwg. P/L 001929

Part List Specification

sheet 1 of 1

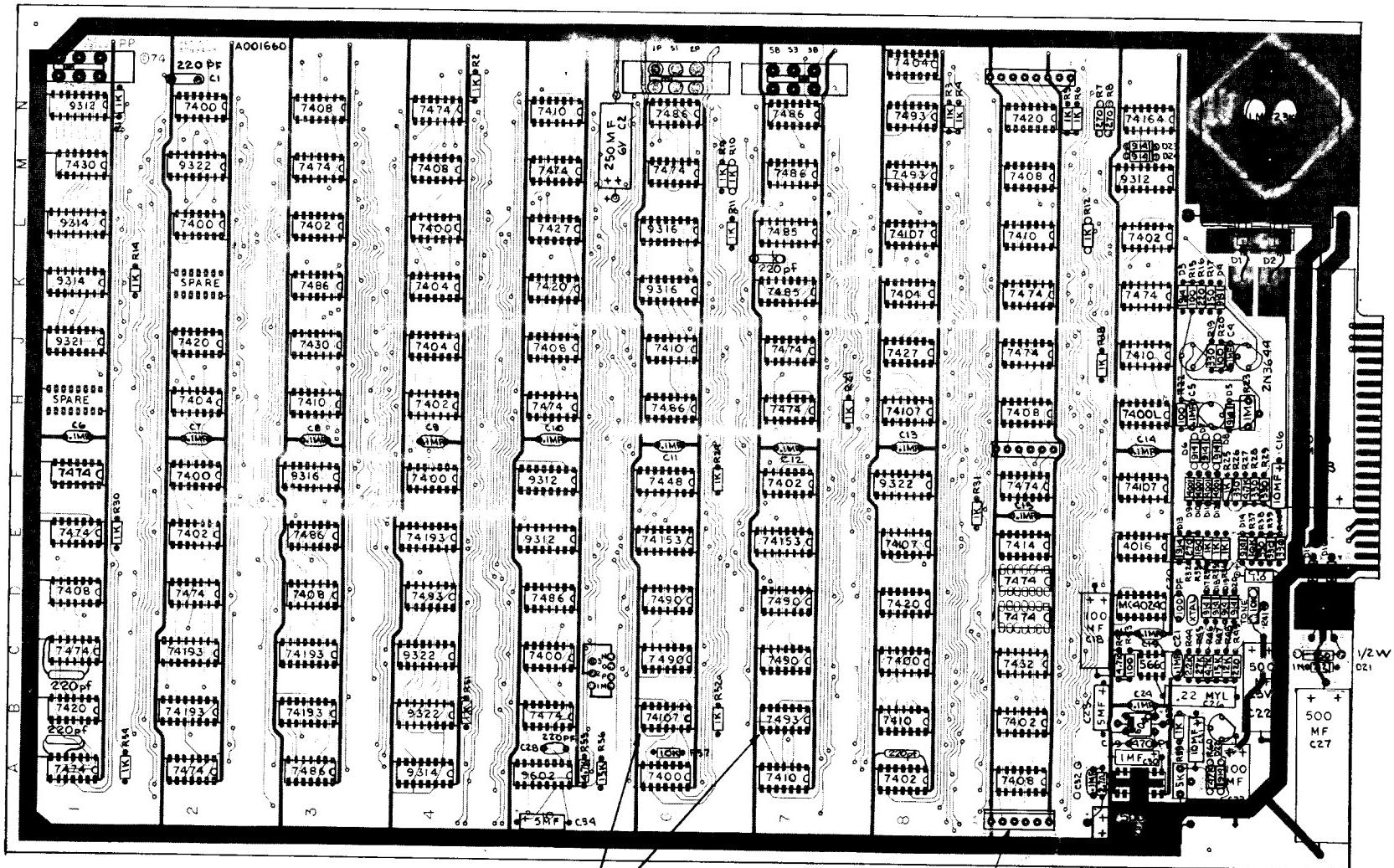
Drawn Cynthia		
Checked	Mech. Eng.	BEN CHEN Rev.
Proj. Eng.	Elec. Eng.	<u>Kerry Deppert</u> B

Rev.	Description	Apprv.	Rev.	Description	Apprv.
A	PREPROD REL 9/23/74	JAY PC			
B	Rev per ECN 916 10/25/74	JAY PC			
B	PROD REL 11/7/74	JAY ZYB			

Item	Part. No.	Qty.	Description			
1	60013/60-0102	1	Switch, Push-button, Rundel (#R2)			
2	60011/60-0301	1	Ring, Anti-Rotation (#SA 19)			
3	60012/60-0401	1	Contact Block, SPST, N.O.			
4	60014/60-0202	1	Cap, Switch (Yellow), #AY 1			
5	001819	1	Bracket, Mounting, Control			

REVISED			
SYN	DESCRIPTION	INITIALS AND DATE	
C	PRODUCTION RELEASE	15%	<i>[Signature]</i>
D	REV. PER ECN 751,811,812	9/23/74	<i>[Signature]</i>
E	REV. PER ECN S20	10/12/74	<i>[Signature]</i>
F	REV. PER ECN 971	10/12/74	<i>[Signature]</i>
G	REV. PER ECN 1071	10/14/74	<i>[Signature]</i>

D



3
CUT TRACE HERE
ADD JUMPER FROM
FEED-THRU TO TRACE
MODIFICATION TO K7 PIN 11
VIEWED FROM CIRCUIT SIDE
CONNECTOR →
INSTALL WITH POLARIZING TAB AS SHOWN

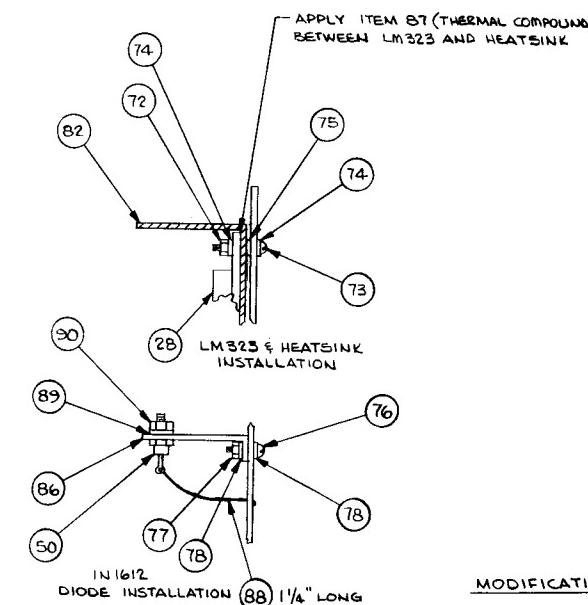
4. FOR 60HZ, SEE P/L 001660-01.
FOR 50HZ, SEE P/L 001660-02.

3. INTEGRATED CIRCUITS B6 (74107) AND B7 (7493) ARE
LOADED FOR 50HZ OPERATION ONLY.

2. ALL TRANSISTORS ARE 2N3644.

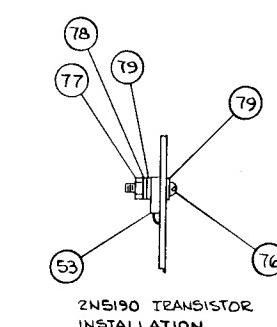
1. ALL DIODE ARE IN914.

NOTES: UNLESS OTHERWISE SPECIFIED.



MODIFICATION LIST

1. ADD 220 pF CAPACITOR BETWEEN PINS 5 AND 7 OF A1.
2. ADD 220 pF CAPACITOR BETWEEN PINS 7 AND 13 OF C1.
3. ON CIRCUIT SIDE OF BOARD, CUT TRACE TO K7 PIN 11
AND JUMPER TO ADJACENT TRACE AS SHOWN.
4. ADD 220 pF CAPACITOR BETWEEN PIN 1 OF A8 AND GND BUSS.



2N5190 TRANSISTOR
INSTALLATION

INTERPRET THIS DRAWING PER USAF Y14.5	DRAWN BY PCS	DATE 9/2/74
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS ± 1/16" ± 1/32" ± 1/64" ANGLES ± 1° ± 1/2° ± 1/4° ± 1/8° SURFACE FINISH ✓ ✓ ✓ ± .010	CHECKED <i>[Signature]</i>	DESIGN ENGINEER <i>[Signature]</i>
MATERIAL 60HZ P/L 001660-01 50 HZ P/L 001660-02	APPROVED <i>[Signature]</i>	TITLE ASSEMBLY PIN PONG (60HZ/60HZ)
DOCUMENT CONTROL NEXT ASSY USED ON APPLICATION	SIZE B	DRAWING NO A001660
SCALE 1/1	REV G	SHEET 1 OF 1

A

3 ↑ 2 ↑ 1 ↑

8

7

6

5

4

3

2

1

D

D

C

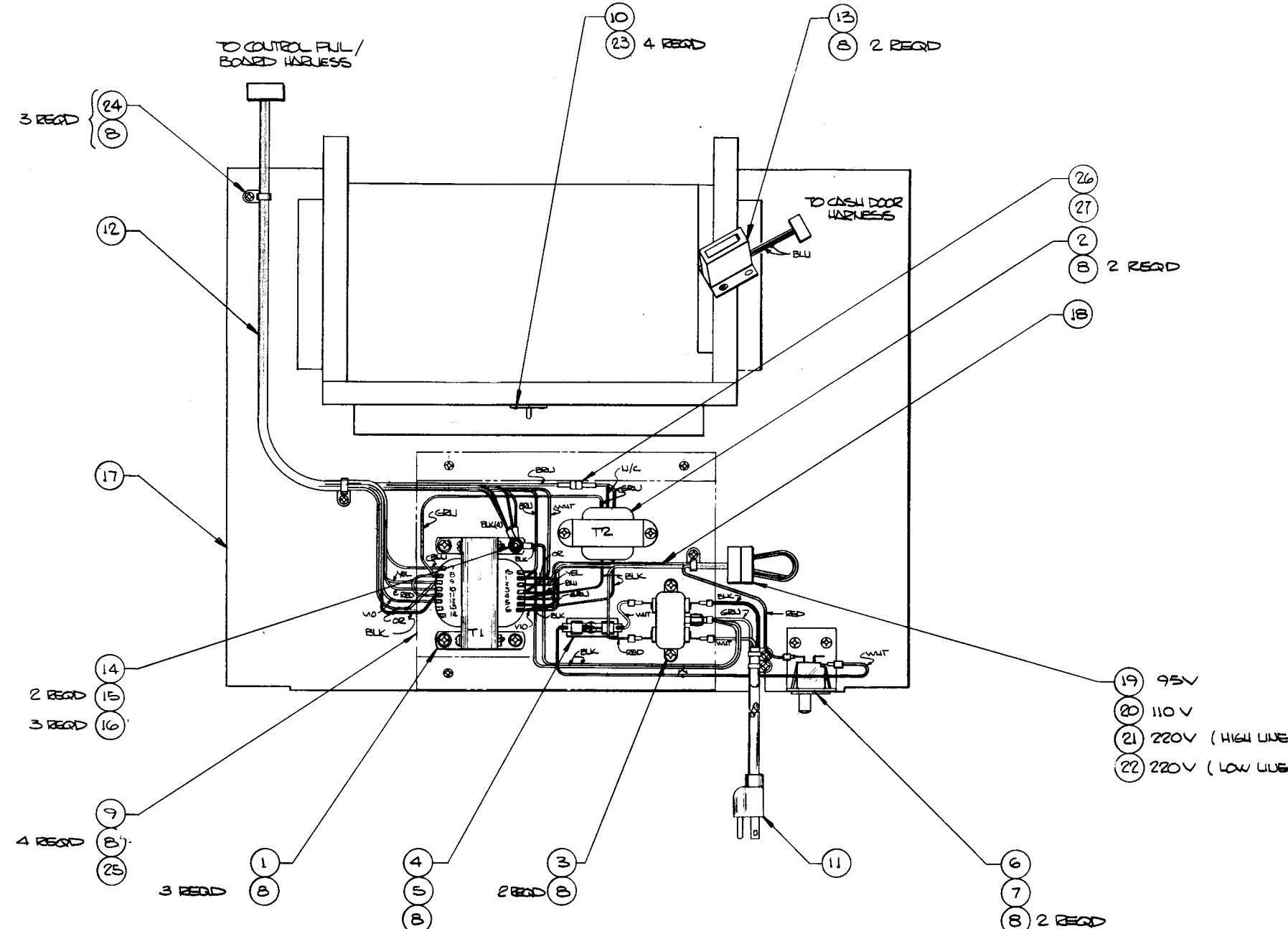
C

B

B

A

A



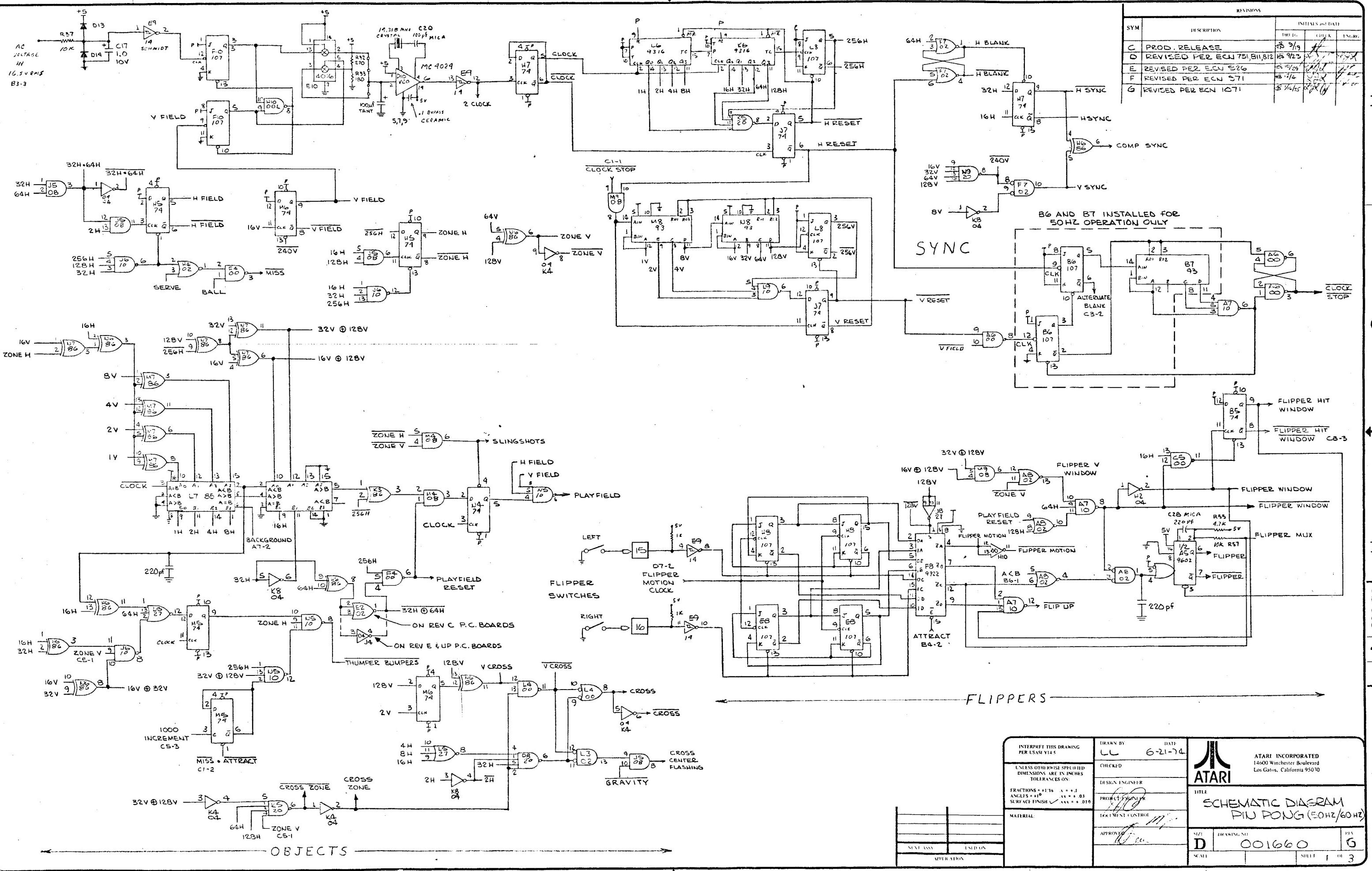
REVISIONS		INITIALS and DATE		
SYM	DESCRIPTION	DRFTG	CHECK	ENGRC
A	PROD REL	10974	✓	LC
B	REVISED PER ECN 893	10974	✓	LC

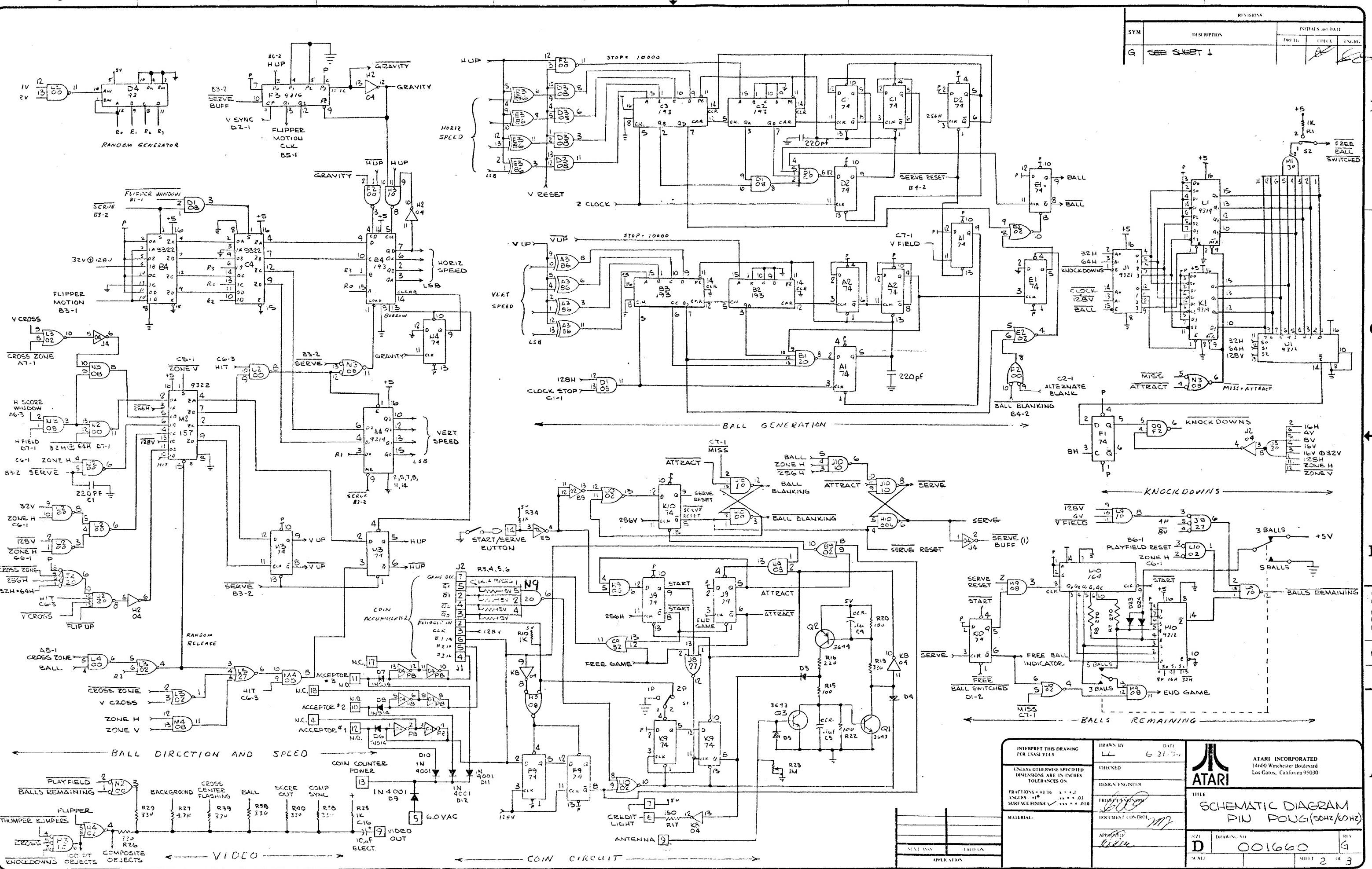
DRAWING NO. A001927
SHEET 1
REV B

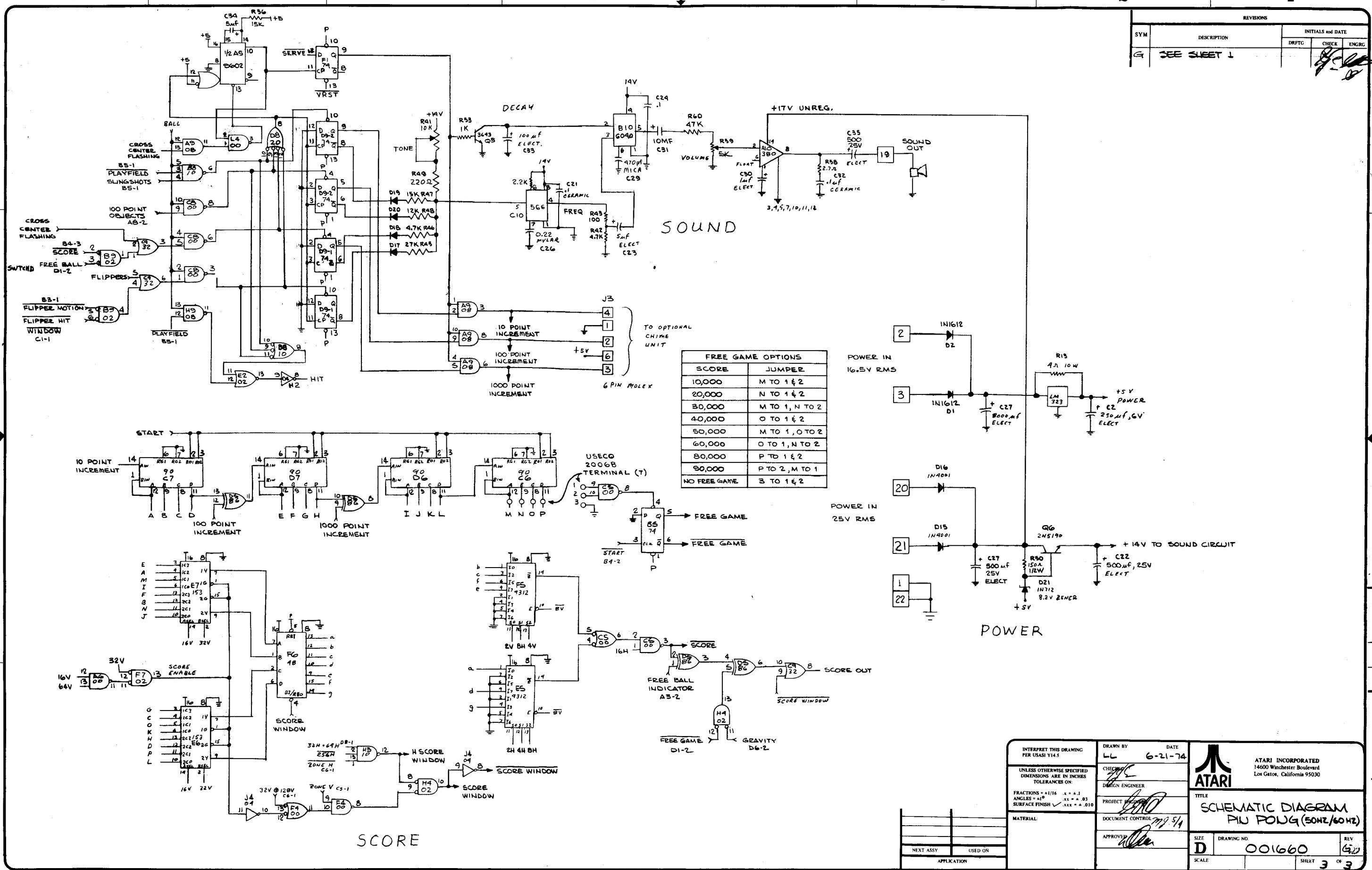
INTERPRET THIS DRAWING PER ASA/ Y14.5	DRAWN BY <i>DC</i> 10974	DATE 10974
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	CHECKED	
TOLERANCES ON:		
FRACTIONS = $\pm\frac{1}{16}$ x = $\pm.1$ ANGLES = $\pm 1^\circ$ xx = $\pm .03$ SURFACE FINISH ✓ xxx = $\pm .01$	DESIGN ENGINEER <i>PC</i>	PROJECT ENGINEER <i>Parry L. Sargent 10/16/74</i>
MATERIAL: SEE PR 001927	DOCUMENT CONTROL	TITLE ATARI INCORPORATED 14600 Winchester Boulevard Los Gatos, California 95030 ASSEMBLY ELECTRONICS TRAY
APPROVED <i>J. L. L. 10/16/74</i>	SIZE D DRAWING NO. A001927	REV B
SCALE 1/2	SHEET 1 OF 1	

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A001913	A001915
NEXT ASSY	USED ON
APPLICATION	







INTERPRET THIS DRAWING PER USASI Y14.5		DRAWN BY <u>LL</u>	DATE 6-21-74	 ATARI INCORPORATED 14600 Winchester Boulevard Los Gatos, California 95030	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON:		CHECKED <u>JHC</u>	DESIGN ENGINEER		
FRACTIONS = $\pm 1/16$ $x = \pm .1$ ANGLES = $\pm 1^\circ$ $.xx = \pm .03$ SURFACE FINISH ✓ $.xxx = \pm .010$		PROJECT ENGINEER <u>LLD</u>	DOCUMENT CONTROL <i>m9 5/1</i>		
MATERIAL:		APPROVED <u>LLD</u>	SIZE D		DRAWING NO. 001660
NEXT ASSY	USED ON		REV G		
APPLICATION		SCALE	3 OF 3		

8

7

6

5

4

3

2

1

REVISIONS

SYM	DESCRIPTION	INITIALS and DATE		
		DRFTG	CHECK	ENGRD
B	PROD REL REVISED PER ECN 874	10-15-74	PC	
C	REVISED PER ECN 852	10-21-88	PC	
D	REV PER ECN 1425	5/15/88	PC	

D

D

C

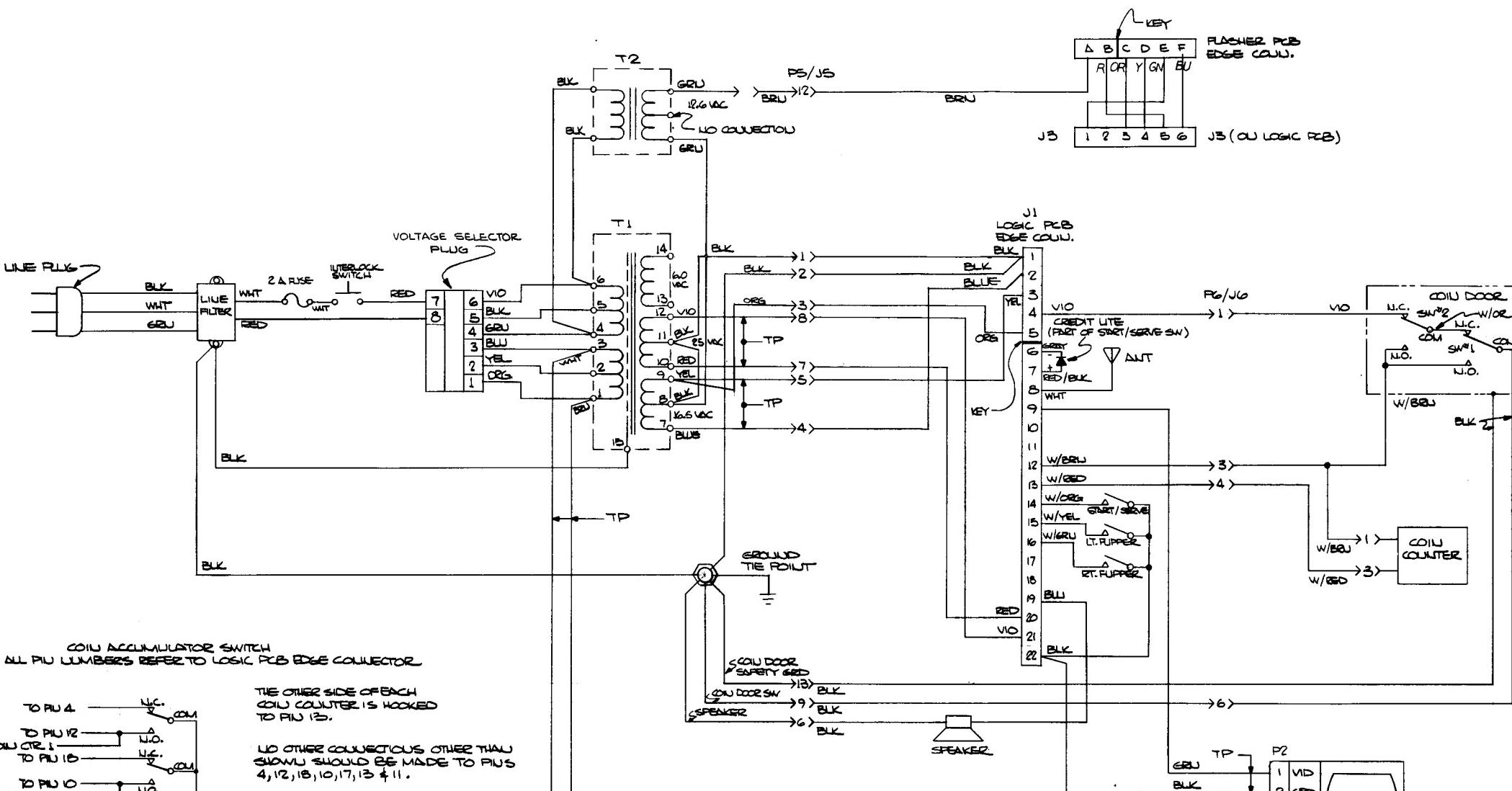
C

B

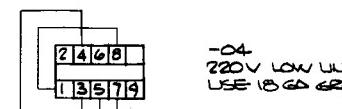
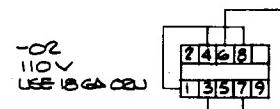
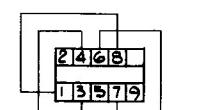
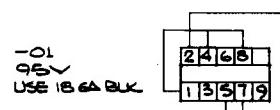
B

A

A



10 PIN MOLEX VOLTAGE SELECTOR PLUGS



* SEE DRAWING 4001921 FOR FULL DETAIL

INTERPRET THIS DRAWING PER USASI Y14.5	DRAWN BY <i>COOK</i> DATE 10-15-74
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ON: FRACTIONS = 1/16 .x = .11 ANGLES = .1° .x = .03 SURFACE FINISH ✓ .xxx = .010	
DESIGN ENGINEER <i>PC</i>	DOCUMENT CONTROL
PROJECT ENGINEER <i>John Rappaport 10/16/88</i>	APPROVED <i>E. E. Cook</i>
ACO1813 ACO1813 NEXT ASSY USED ON APPLICATION	SHEET 1 OF 1
TITLE WIRING DIAGRAM PIN PONG	
SIZE D DRAWING NO 0001982 REV 0	SCALE SHEET 1 OF 1



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14600 Winchester Boulevard
Los Gatos, California 95030